

## CLAIMS

1. An isolated, natural or synthetic peptide, 5 characterized in that it comprises at least any one of the sequences SEQ ID NO : 1 to SEQ ID NO : 10, in which R<sub>1</sub> and R<sub>2</sub> represent, independently or simultaneously, a cysteine or a serine.
- 10 2. The peptide as claimed in claim 1, characterized in that it corresponds to any one of the sequences SEQ ID NO : 1 to SEQ ID NO : 10.
- 15 3. The peptide as claimed in either one of claims 1 or 2, characterized in that its sequence is substantially homologous to at least one of the sequences SEQ ID NO : 1 to SEQ ID NO : 10.
- 20 4. The peptide as claimed in any one of claims 1 to 3, of which at least one amine and/or carboxylic, free functional group is protected by a protective group.
- 25 5. The peptide as claimed in claim 4, characterized in that the C-terminal carboxylic group and/or the other carboxylic groups present in the molecule are in the form of an ester or of an amide.
- 30 6. The peptide as claimed in claim 4, characterized in that the N-terminal amine group, and/or the other free amine groups present in the molecule, are in acylated form.
- 35 7. A composition comprising at least one peptide such as described in any one of claims 1 to 6 and at least one appropriate vehicle.

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8. The use of at least one peptide such as described in any one of claims 1 to 6, as an antimicrobial agent, directed against the pathogenic agents of plants.
- 5 9. The use as claimed in claim 8, characterized in that the antimicrobial agent is specific for *Xanthomonas campestris*, *Pseudomonas syringae* or for *Erwinia amylovora*.
- 10 10. The use of at least one peptide comprising or corresponding to at least any one of the sequences SEQ ID NO : 2 to SEQ ID NO : 10, in which R<sub>1</sub> represents a cysteine or a serine and R<sub>2</sub> represents a cysteine, as a cytotoxic agent, particularly for plant cells.
- 15 11. The use of at least one peptide comprising or corresponding to at least any one of the sequences SEQ ID NO : 8 to SEQ ID NO :10, in which R<sub>1</sub> and R<sub>2</sub> simultaneously represent a serine, as a cytotoxic agent, particularly as a cytotoxic agent for plant cells.
- 20 12. The use as claimed in either one of claims 10 or 11, characterized in that the peptide is used as a herbicidal agent.
- 25 13. The use of at least one peptide comprising or corresponding to at least any one of the sequences SEQ ID NO : 8 to SEQ ID NO :10, in which R<sub>1</sub> represents a cysteine and R<sub>2</sub> represents a serine, as a noncytotoxic antimicrobial agent, particularly as a noncytotoxic antimicrobial agent directed against the pathogenic agents of plants.
- 30 14. An isolated, natural or synthetic, polynucleotide, characterized in that it comprises at least one

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sequence coding for at least one of the peptides as claimed in any one of claims 1 to 6, with the exception of the genomic deoxyribonucleic acid of *Arabidopsis thaliana*.

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15. The polynucleotide as claimed in claim 14, characterized in that it comprises at least one of the following sequences SEQ ID NO : 11 to SEQ ID NO : 20, in which R<sub>3</sub> and R<sub>4</sub> represent, independently or 10 simultaneously, a cysteine codon or a serine codon.

16. The polynucleotide as claimed in claim 14 or claim 15, characterized in that it corresponds to one of the sequences SEQ ID NO : 11 to SEQ ID NO : 20, in which R<sub>3</sub> 15 and R<sub>4</sub> represent a cysteine codon or a serine codon.

17. A composition comprising at least one polynucleotide such as described in any one of claims 14 to 16 and at least one appropriate vehicle.

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18. A vector comprising any one of the polynucleotides described in claims 14 to 16.

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19. The vector as claimed in claim 18, characterized in that it is a plasmid vector.

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20. The use of a polynucleotide as claimed in any one of claims 14 to 16 or of a vector such as described in any one of claims 18 or 19 for the preparation of a peptide such as described in any one of claims 1 to 6.

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21. A modified biological system, characterized in that it contains at least one of the vectors such as described in either one of claims 18 or 19, and/or at least one of the polynucleotides such as described in any one of claims 14 to 16.

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22. The biological system as claimed in claim 21, characterized in that it is formed by a microorganism, an endophyte, a yeast or a eukaryotic cell.

5 23. A composition comprising at least one biological system such as described in either one of claims 21 or 22 and at least one appropriate vehicle.

10 24. The use of at least one biological system such as described in either one of claims 21 or 22 or of a composition such as described in claim 23, as an antimicrobial agent, particularly as an antimicrobial agent directed against the pathogenic agents of plants and/or as a cytotoxic agent.

15 25. The use of at least one polynucleotide such as described in any one of claims 14 to 16, or of at least one vector such as described in either one of claims 18 or 19, in the preparation of a biologically modified system.

25 26. A transgenic nonhuman organism, characterized in that all or part of its cells contains at least one polynucleotide such as described in any one of claims 14 to 16, or at least one vector such as described in either one of claims 18 or 19.

27. The transgenic organism as claimed in claim 26, characterized in that it is a plant.

30 28. A polyclonal or monoclonal antibody directed against at least one of the peptides such as described in any one of claims 1 to 6.

35 29. A process of antimicrobial and/or cytotoxic treatment, in which an organism, particularly a plant, and at least one antimicrobial and/or cytotoxic agent,

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chosen from at least one of the peptides such as described in any one of claims 1 to 6 and/or one of the vectors such as described in either one of claims 18 or 19, and/or the polynucleotides such as described in any 5 one of claims 14 to 16, and/or one of the modified biological systems such as described in either one of claims 21 or 22 and/or a transgenic organism, such as described in either one of claims 26 to 27 or the compositions such as described in any one of claims 7, 10 17 or 23 are contacted by any appropriate means.